MECHANICAL DATA SHEET: VESSEL

PLANT ITEM No.
24590-PTF-MV-RDP-VSL-00002A

Project	***RPP-WTP***	P&ID	***24590-PTF-M6-RDP-P0001, 24590-PTF-M6-RDP-P0006, 24590-PTF-MV-CNP-P0005*** 1
Project No	***24590***	Process Data Sheet	***24590-PTF-MVC-RDP-00001*** 1
Project Site	***Hanford***	Vessel Drawing	***24590-PTF-MV-RDP-P0001***
Description	***Spent Resin Slurry Vessel.***		

6 KB 4/28/04

ISSUED BY RPP-WTP PDC 4/28/2004 INIT DATE

Reference Data

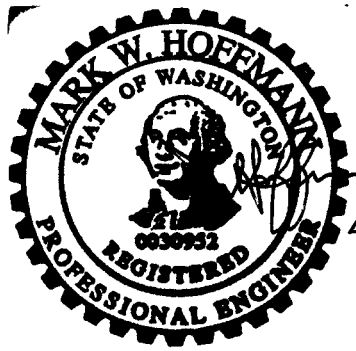
Charge Vessels (Tag Numbers)	***N/A***
Pulsejet Mixers / Agitators (Tag Numbers)	***RDP-PJM-00001-00002-00003-00004*** 1
RFDs/Pumps (Tag Numbers)	1

Design Data

Quality Level		***QL-1***			Fabrication Specs	***24590-WTP-3PS-MV00-TP001***	
Seismic Category		***SC-I***			Design Code	***ASME VIII Div 1***	
Service/Contents		***Resin Slurry (Radioactive)*** 1			Code Stamp	***Yes***	
Design Specific Gravity		***1.22***			NB Registration	***Yes***	
Maximum Operating Volume	gal	***12,688*** 1			Weights (lbs)	Empty	Operating / Test
Total Volume	gal	***15,230*** 1			Estimated	***36,500***	***168,000*** / ***164,000***
					Actual *		

Inside Diameter	inch	***144***			Wind Design	***Not Required***	
Length/Height (TL-TL)	inch	***168***			Snow Design	***Not Required***	
		Vessel Operating	Vessel Design	Coil/Jacket Design	Seismic Design	***24590-WTP-3PS-MV00-TP002*** ***24590-WTP-3PS-SS90-T0001*** 1	
Internal Pressure	psig	1 ***0***	***15***	***N/A***	Seismic Base Moment *	ft*lb	
External Pressure	psig	1 ***0.22***	***FV***	***N/A***	Postweld Heat Treat	***Not Required***	
Temperature	°F	***113***	***138***		Corrosion Allowance	Inch	***0.04***
Min. Design Metal Temp.	°F	***30***			Hydrostatic Test Pressure *	psig	

Note: Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the U.S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts, that pursuant to the AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only. 1



4/28/04

EXPIRES 12/10/04

This Bound Document Contains a total of 4 pages.

REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	REVIEWER	APPROVER
1	4/26/04	Issued for Permitting Use	J Jackson	C. Slater	N/A	M. Hoffmann
0	12/18/03	Issued for Permitting Use				

BECHTEL	**MECHANICAL DATA SHEET: VESSEL**	**PLANT ITEM No.** ***24590-PTF-MV-RDP-VSL-00002A***

Materials of Construction

Component	Material	Minimum Thickness / Size	Containment
Top Head	***SA 240 316 Note 1***	***See Drawing***	***Auxiliary (See Note 5)*** 1
Shell	***SA 240 316 Note 1***	***See Drawing***	***Primary (See Note 5)*** 1
Bottom Head	***SA 240 316 Note 1***	***See Drawing***	***Primary (See Note 5)*** 1
Support	***SA 240 304 Note 1***	***See Drawing***	***N/A***
Jacket/Coils/Half-Pipe Jacket	***N/A***	***N/A***	***N/A***
Internals	***SA 240 316 Note 1***	***See Drawing***	***N/A***
Pipe	***SA 312 TP 316 Note 1 (Seamless)***	***See Drawing***	***Primary (See Note 5)*** 1
Forgings/ Bar stock	***SA 182 F316 Note 1***	***See Drawing***	***N/A***
Gaskets	***N/A***	***N/A***	***N/A***
Bolting	***N/A***	***N/A***	***N/A***

Miscellaneous Data

Orientation	***Vertical***	Support Type	***Skirt***
Insulation Function	***Not Applicable***	Insulation Material	***Not Applicable***
Insulation Thickness (inch)	***Not Applicable***	Internal Finish	***Note 3*** 1
		External Finish	***Note 3*** 1

Remarks

**** To be determined by the vendor.***
Note 1: Max. Carbon content 0.030%
Note 2: Deleted 1
Note 3: Welds de-scaled as laid
Note 4: This Vessel is in a Black Cell 1
Note 5: All Welds Forming Part of the Primary and Auxiliary Containment, including Nozzle Attachment Welds, Shall be Subjected to 100% Volumetric Examination 1

	MECHANICAL DATA SHEET: VESSEL	PLANT ITEM No. 24590-PTF-MV-RDP-VSL-00002A

Equipment Cyclic Data Sheet

Component Plant Item Number:	***RDP-VSL-00002A***
Component Description	***Parent Vessel***

The information below is provisional and envelopes operational duty for fatigue assessment. It is not to be used as operational data.

Materials of Construction	***SA 240 316 with 0.03% max. carbon***
Design Life	***40 Years***
Component Function and Life Cycle Description	***The purpose of the Spent Resin Slurry Vessel is to receive and hold one batch of spent resin.***

Load Type		Min	Max	Number of Cycles	Comment
Design Pressure	psig	***FV***	***15***	***10***	***Nominal Assumption***
Operating Pressure	psig	***-0.22***	***0***	***N/A***	***This vessel will remain under constant pressure depending upon the vessel plant HVAC system.***
Operating Temperature	°F	***59***	***113°F***	***N/A***	***Temperature will not cycle appreciably with vessel cycling.***
Contents Specific Gravity		****1.00***	***1.22***	***N/A***	****The value given is for the pure liquid phase of vessel contents. The vessel will normally contain slurry of resin particles with particle density of approximately 1.4g/cc. The slurry solids content will be between 0 and 35 % by volume.***
\Contents Level	inch	***0***	***139***	***1.66 x 10^4***	
Localized Features					
Nozzles					
Supports					

Notes

- ***Cycle increase: The seller must increase the numbers of operational cycles given above by 10% to account for commissioning duty unless otherwise noted.***

	MECHANICAL DATA SHEET: VESSEL	PLANT ITEM No. 24590-PTF-MV-RDP-VSL-00002A

Equipment Cyclic Data Sheet

Component Plant Item Number:	***24590-PTF-MV-RDP-PJM-00001, 00002, 00003 & 00004***
Component Description	***Pulse Jet Mixers***

The information below is provisional and envelopes operational duty for fatigue assessment. It is not to be used as operational data.

Materials of Construction	***SA 240 316 with 0.03% max. carbon***
Design Life	***40 Years***
Component Function and Life Cycle Description	***These pulse jet mixers are cyclically loaded using vacuum to fully fill the vessel with process liquid and compressed air to fully empty the vessel. The pulse jet mixers are contained within a parent vessel with varying liquid level. They shall be designed to cycle between the maximum design pressure and the minimum design pressure plus the external static head imposed by the parent vessel. The pulse jet mixer supports shall be designed to cycle between fully buoyant (pulse jet mixer empty and parent vessel full) and fully loaded (pulse jet mixer full and parent vessel empty) in addition to thrust.***

Load Type		Min	Max	Number of Cycles	Comment
Design Pressure	psig	***FV***	***80***	***$6.2x10^6$***	***Based upon 168 sec cycle time, assuming that the parent vessel will be used 200 times in 40 years for 2 months at a time.***
Operating Pressure	psig	***FV***	***72.5***	***$6.2x10^6$***	
Operating Temperature	°F	***59***	***113***	***N/A***	***Temperature will not cycle appreciably with vessel cycling.***
Contents Specific Gravity		***1.00***	***1.22***	***N/A***	***The value given is for the pure liquid phase of vessel contents. The vessel will normally contain slurry of resin particles with particle density of approximately 1.4g/cc. The slurry solids content will be between 0 and 35 % by volume.***
\Contents Level	inch	***Empty***	***Flooded***	***$6.2x10^6$***	***Based upon 168 sec cycle time, assuming that the parent vessel will be used 200 times in 40 years for 2 months at a time.***
Localized Features					
Nozzles					
Supports					

Notes

- ***Cycle increase: The seller must increase the numbers of operational cycles given above by 10% to account for commissioning duty unless otherwise noted.***